

# HS-420I/M Intrinsically Safe Accelerometer

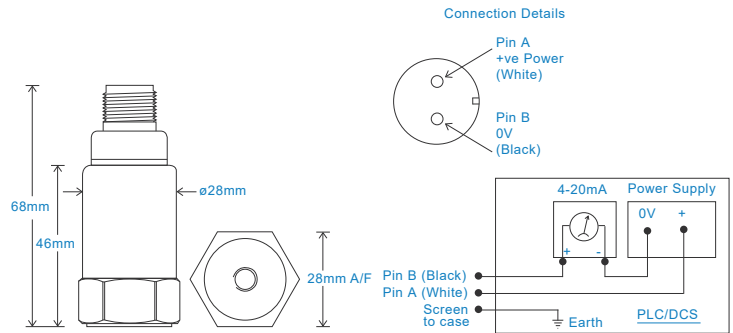
## 4-20mA velocity output via 2 Pin MS Connector

### Key Features

- Intrinsically Safe with European, USA, Australian, South African, and Indian approvals
- Approved SIL 2 and SIL 3
- For use with PLC/DCS systems
- Customisable features

### Industries

Building services, Pulp and Paper, Mining, Metals, Utilities, Automotive, Water, Pharmaceutical



### Technical Performance

Mounted Base Resonance	5kHz min
Velocity Ranges	see: 'How To Order' table $\pm 10\%$ Nominal 80Hz at 22°C
Frequency Response	10Hz (600cpm) to 1kHz (60kcpm) $\pm 5\%$ - ISO10816
Isolation	Base isolated
Range	50g peak
Transverse Sensitivity	Less than 5%

### Mechanical

Case Material	Stainless Steel
Sensing Element/Construction	PZT/Compression
Mounting Torque	8Nm
Weight	150gms (nominal)
Screened Cable Assembly	see: <a href="http://www.hansfordsensors.com">www.hansfordsensors.com</a> for options
Connector	HS-AA004 - non-booted HS-AA053 or HS-AA054 - booted
Mounting Threads	see: 'How To Order' table

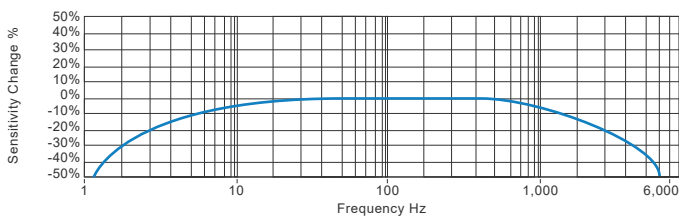
### Electrical

Current Output	4-20mA DC proportional to Velocity Range
Supply Voltage	15-30 Volts DC (for 4-20mA)
Settling Time	2 seconds
Output Impedance	Loop Resistance 600 Ohms max. at 24 Volts
Case Isolation	$>10^8$ Ohms at 500 Volts

### Environmental

Operating Temperature Range	see: attached certification details
Sealing	IP68
Maximum Shock	5000g
EMC	EN61326-1:2013

### Typical Frequency Response



### Applications

Fans, Motors, Pumps, Compressors, Centrifuges, Conveyors, Air Handlers, Gearboxes, Rolls, Dryers, Presses, Cooling, VAC, Spindles, Machine Tooling, Process Equipment

Vibration sensor should be firmly fixed to a flat surface (spot face surface may be needed to be produced and cable anchored to sensor body.)



### Certifications



This product is certified in accordance with  
**UL 913, 8th Ed. Rev. December 6, 2013**  
**CAN/CSA C22.2 No. 157-92 (R2012) +Upd1 +Upd2**

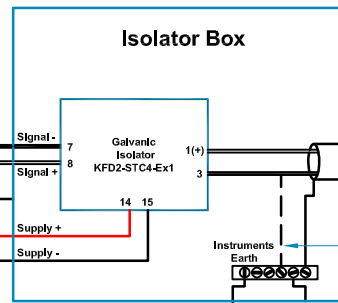


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 汉施弗德传感器（上海）有限公司

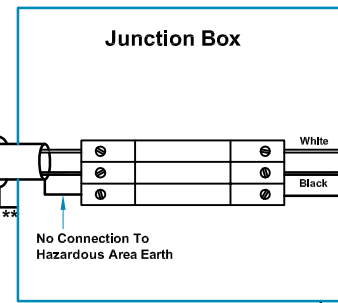




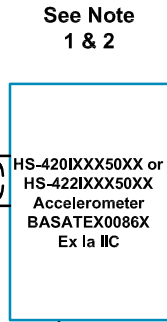
Non-hazardous area apparatus which is unspecified except that it must not be supplied from nor contain under normal or abnormal conditions, a source of potential with respect to earth in excess of 250 volts DC. under normal conditions the potential at the connections to the galvanic isolator must not exceed 40 volts DC.



See Table 1



Inner screen Isolated from accelerometer body



**Table 1: Cable Parameters For Additional Cable Lengths**

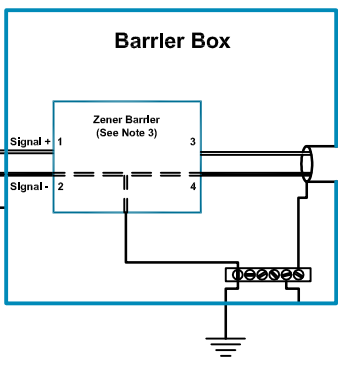
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.097	72
IIB	0.768	277
IIA	2.598	585
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.091	72
IIB	0.762	277
IIA	2.592	585
Accelerometer With Integral Cable Length ≤ 100m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.083	72
IIB	0.754	277
IIA	2.584	585

**Hansford Sensors Ltd**  
 HS-420I & HS-422I Accelerometer System  
 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

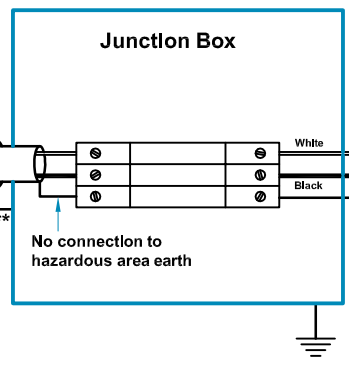
- Notes:**
- The capacitance and inductance, or inductance - to - resistance ratio (L/R) of hazardous area cable, must not exceed the values shown in Table 1.
  - The cable from the accelerometer to the junction box must not be installed in a high velocity dust laden atmosphere.
  - The installer is to perform a risk assessment in accordance with clause 10 of EN 60079-25 and install lightning protection arrestors as deemed necessary.

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A	<p><b>Hansford Sensors Ltd</b>          Excellence in Vibration Monitoring</p> <p>Hansford Sensors Ltd          Artisan, Hillbottom Rd          Sands Industrial Estate          High Wycombe          Bucks. HP12 4HJ</p>	<p><b>Do Not Scale</b></p>	Description: <b>System Connections Details</b> For HS-420I & HS-422I Group II Accelerometers With 2 Pin MS Connector F.U.W. Galvanic Isolation	
A	Release	16/09/15	MJS	CMH	Tolerances Unless Stated 0 or 0.0 ±0.5 0.00 ±0.15 Angle ±5°			All Dimensions In mm Unless Otherwise Stated	Drawing No: <b>M06-059-A</b> Scale: <b>NTS</b> Sheet: <b>1 of 1</b>
					Finish All Over Threads g6 H6	<p><b>If In Doubt - Ask!</b></p>	Form Number: <b>QF024 Issue 1</b>		

Non-hazardous area apparatus which is unspecified except that it must not be supplied from nor contain under normal or abnormal conditions, a source of potential with respect to earth in excess of 250 volts rms or 250 volts dc. under normal conditions the potential at the connections to the zener barrier must not exceed 40 volts dc.



See Table 1



\*\*Outer shield only connected to chassis via Ex approved cable gland

Inner screen isolated from accelerometer body



**Table 1: Cable Parameters For Additional Cable Lengths**

Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.081	56
IIB	0.247	168
IIA	0.662	448
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.075	56
IIB	0.241	168
IIA	0.656	448
Accelerometer With Integral Cable Length ≤ 100m		
Group	Capacitance μF	L/R Ratio μH/Ω
IIC	0.067	56
IIB	0.233	168
IIA	0.648	448

**Hansford Sensors Ltd**  
 HS-420I & HS-422I  
 Accelerometer System  
 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

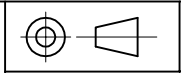
**Notes:**

- The capacitance and Inductance, or Inductance - to - resistance ratio (L/R) of hazardous area cable, must not exceed the values shown in Table 1.
- The cable from the accelerometer to the junction box must not be installed in a high velocity dust laden atmosphere.
- Any shunt zener diode safety barrier certified by an ec approved body to [EEx ia] IIC having the following output parameters: U<sub>o</sub> = 28V dc, I<sub>o</sub> = 93mA dc, P<sub>o</sub> = 0.65W. e.g. MTL7787 to BAS01ATEX7217 or Pepperl + Fuchs Z787 to BAS01ATEX7005.
- The installer is to perform a risk assesment in accordance with clause 10 of EN 60079-25 and install lightning protection arrestors as deemed necessary.

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A
A	Release	16/09/15	MJS	CMH	

Tolerances Unless Stated  
 0 or 0.0 ±0.5  
 0.00 ±0.15  
 Angle ±5°  
 1.6/ Finish All Over  
 Threads g6 H6

**Hansford Sensors Ltd**  
 Artisan, Hillbotom Rd  
 Sands Industrial Estate  
 High Wycombe  
 Bucks. HP12 4HJ



Do Not Scale

All Dimensions In mm Unless Otherwise Stated

**If In Doubt - Ask!**

Description: **System Connections For HS-420I & HS-422I Group II Accelerometers With 2 Pin MS Connector F.U.W. Zener Barrier**

Drawing No: **M06-059-A**

Scale: **NTS**

Sheet: **2 of 2**

Form Number: **QF024 Issue 1**